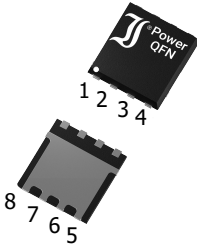


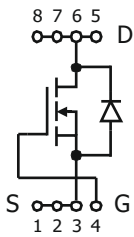
DI040N03PT N-Channel Power MOSFET N-Kanal Leistungs-MOSFET	I_{D25°C} = 40 A R_{DS(on)} ~ 6 mΩ T_{jmax} = 150°C	V_{DSS} = 30 V P_D = 25 W E_{AS} = 100 mJ
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Version 2020-03-19

QFN3x3



SPICE Model & STEP File ¹⁾



Marking Code
303N095

HS Code 85412100

Typical Applications

Power Management Units
Battery powered devices
Load Switches, Polarity Protection
Commercial grade
Suffix -Q: AEC-Q101 compliant ¹⁾
Suffix -AQ: AEC-Q101 qualified ¹⁾

Features

Tiny, space saving package
Low profile height
Low on state resistance
Fast switching times
Low gate charge
Compliant to RoHS, REACH,
Conflict Minerals ¹⁾

Mechanical Data ¹⁾

Taped and reeled
Weight approx.
Case material
Solder & assembly conditions



5000 / 13"
0.1 g
UL 94V-0
260°C/10s
MSL = 1

Typische Anwendungen

Stromüberwachungseinheiten
Batteriebetriebene Geräte
Lastschalter, Verpolschutz
Standardausführung
Suffix -Q: AEC-Q101 konform ¹⁾
Suffix -AQ: AEC-Q101 qualifiziert ¹⁾

Besonderheiten

Winzige, platzsparende Bauform
Niedrige Bauhöhe
Niedriger Einschaltwiderstand
Schnelle Schaltzeiten
Niedrige Gate-Ladung
Konform zu RoHS, REACH,
Konfliktmineralien ¹⁾

Mechanische Daten ¹⁾

Gegurtet auf Rolle
Gewicht ca.
Gehäusematerial
Löt- und Einbaubedingungen

Maximum ratings ¹⁾

Grenzwerte ²⁾

			DI040N03PT/-AQ
Drain-Source voltage Drain-Source-Spannung	$V_{GS} = 0\text{ V (short)}$	V_{DSS}	30 V
Gate-Source-voltage continuous – Gate-Source-Spannung dauernd		V_{GSS}	± 20 V
Power dissipation – Verlustleistung	$T_C = 25^\circ\text{C}^2)$	P_{tot}	25 W
Drain current continuous Drainstrom dauernd	$T_C = 25^\circ\text{C}^3)$	I_D	40 A
Drain current continuous Drainstrom dauernd	$T_C = 100^\circ\text{C}^3)$	I_D	27 A
Peak Drain current – Drain-Spitzenstrom	³⁾	I_{DM}	120 A
Source current continuous Sourcestrom dauernd	$T_C = 25^\circ\text{C}^3)$	I_S	33 A
Peak Source current – Source-Spitzenstrom	$V_{GS} = 0\text{ V}, t_p = 10\text{ ms}$	I_{SM}	75 A
Single pulse avalanche energy Einzelpuls Avalanche-Energie (Fig. 1)	$V_{DD} = 15\text{ V}, V_G = 10\text{ V}$ $L = 0.1\text{ mH}, R_G = 25\ \Omega$	E_{AS}	100 mJ
Junction temperature – Sperrschichttemperatur Storage temperature – Lagerungstemperatur		T_j T_s	-55...+150°C -55...+150°C

1 Please note the [detailed information on our website](#) or at the beginning of the data book
Bitte beachten Sie die [detaillierten Hinweise auf unserer Internetseite](#) bzw. am Anfang des Datenbuches
1 $T_A = 25^\circ\text{C}$, unless otherwise specified – $T_A = 25^\circ\text{C}$, wenn nicht anders angegeben
2 Measured towards heat sink area (Drain) – Gemessen zur Kühlfläche (Drain)
3 Pulse width refer to SOA diagram – Pulsbreite siehe SOA-Diagramm

Characteristics (static)
Kennwerte (statisch)

		$T_j = 25^\circ\text{C}$	Min.	Typ.	Max.
Drain-Source breakdown voltage – Drain-Source-Durchbruchspannung $I_D = 250 \mu\text{A}$ $V_{GS} = 0 \text{ V (short)}$		$V_{(BR)DSS}$	30 V	–	–
Drain-Source leakage current – Drain-Source Leckstrom $V_{DS} = V_{DSS}$ $V_{GS} = 0 \text{ V (short)}$		I_{DSS}	–	–	1 μA
Gate-Body leakage current – Gate-Substrat Leckstrom $V_{GS} = \pm 20 \text{ V}$ $V_{DS} = 0 \text{ V (short)}$		I_{GSS}	–	–	$\pm 100 \text{ nA}$
Gate-Source threshold voltage – Gate-Source Schwellspannung $V_{GS} = V_{DS}$ $I_D = 250 \mu\text{A}$		$V_{GS(th)}$	1 V	–	2.5 V
Drain-Source on-state resistance – Drain-Source Einschaltwiderstand $V_{GS} = 10 \text{ V}$ $I_D = 15 \text{ A}$ $V_{GS} = 4.5 \text{ V}$ $I_D = 10 \text{ A}$		$R_{DS(on)}$	–	6 m Ω 9 m Ω	7 m Ω 11 m Ω

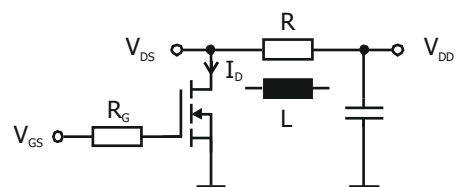
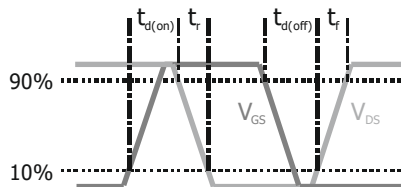
Characteristics (dynamic)
Kennwerte (dynamisch)

		$T_j = 25^\circ\text{C}$	Min.	Typ.	Max.
Forward Transconductance – Übertragungsteilheit $V_{DS} = 5 \text{ V}$ $I_D = 15 \text{ A}$		g_{FS}	–	15 S	–
Input Capacitance – Eingangskapazität $V_{DS} = 15 \text{ V}$ $V_{GS} = 0 \text{ V}$ $f = 1 \text{ MHz}$		C_{iss}	–	1120 pF	–
Output Capacitance – Ausgangskapazität $V_{DS} = 15 \text{ V}$ $V_{GS} = 0 \text{ V}$ $f = 1 \text{ MHz}$		C_{oss}	–	140 pF	–
Reverse Transfer Capacitance – Rückwirkungskapazität $V_{DS} = 15 \text{ V}$ $V_{GS} = 0 \text{ V}$ $f = 1 \text{ MHz}$		C_{rss}	–	105 pF	–
Turn-On Delay & Rise Time – Einschaltverzögerung und Anstiegszeit $V_{DD} = 15 \text{ V}$ $I_D = 15 \text{ A}$ $V_{GS} = 10 \text{ V}$ $R_G = 2.2 \Omega$ (Fig. 1)		$t_{d(on)}$ t_r	–	13 ns 71 ns	–
Turn-Off Delay & Fall Time – Ausschaltverzögerung und Abfallzeit $V_{DD} = 15 \text{ V}$ $I_D = 15 \text{ A}$ $V_{GS} = 0 \text{ V}$ $R_G = 2.2 \Omega$ (Fig. 1)		$t_{d(off)}$ t_f	–	13 ns 21 ns	–
Total Gate Charge – Gesamte Gate-Ladung $V_{DD} = 15 \text{ V}$ $I_D = 15 \text{ A}$ $V_{GS} = 4.5 \text{ V}$		Q_g	–	12 nC	–
Gate-Source Charge – Gate-Source-Ladung $V_{DD} = 15 \text{ V}$ $I_D = 15 \text{ A}$ $V_{GS} = 4.5 \text{ V}$		Q_{gs}	–	3.3 nC	–
Gate-Drain Charge – Gate-Drain-Ladung $V_{DD} = 15 \text{ V}$ $I_D = 15 \text{ A}$ $V_{GS} = 4.5 \text{ V}$		Q_{gd}	–	6 nC	–
Intrinsic Gate resistance – Innerer Gatewiderstand $f = 1 \text{ MHz}$ $D \text{ open}$		R_{Gi}	–	1.6 Ω	–

Fig. 1

Test circuit for switching times (R) and avalanche energy (L)
("rise" and "fall" refer to I_D)

Testaufbau für Schaltzeiten (R) und Avalanche-Energie (L)
("rise" und "fall" beziehen sich auf I_D)



Characteristics (diode)

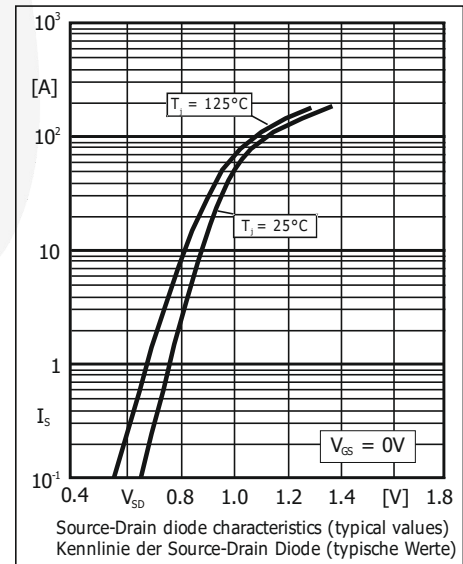
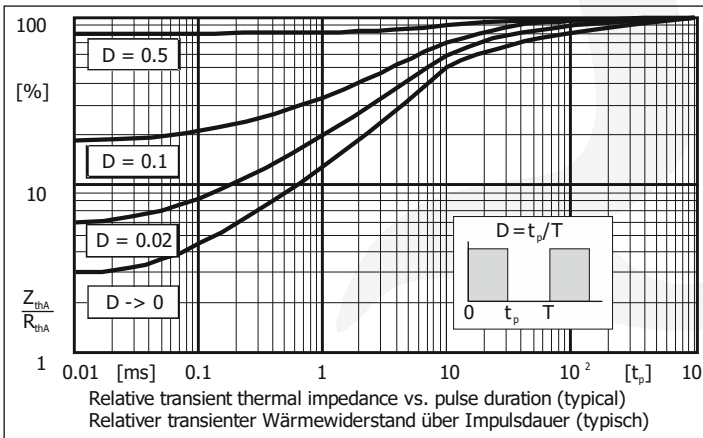
Kennwerte (Diode)

		$T_j = 25^\circ\text{C}$	Min.	Typ.	Max.
Forward voltage – Durchlass-Spannung $V_{GS} = 0\text{ V}$ $I_S = 1\text{ A}$		$-V_{SD}$	–	–	1.2 V
Reverse recovery time – Sperrverzugszeit $I_S = 15\text{ A}$, $di/dt = -100\text{ A}/\mu\text{s}$		t_{rr}	–	7 ns	–
Reverse recovery charge – Sperrverzugsladung $I_S = 15\text{ A}$, $di/dt = -100\text{ A}/\mu\text{s}$		Q_{rr}	–	1.4 nC	–

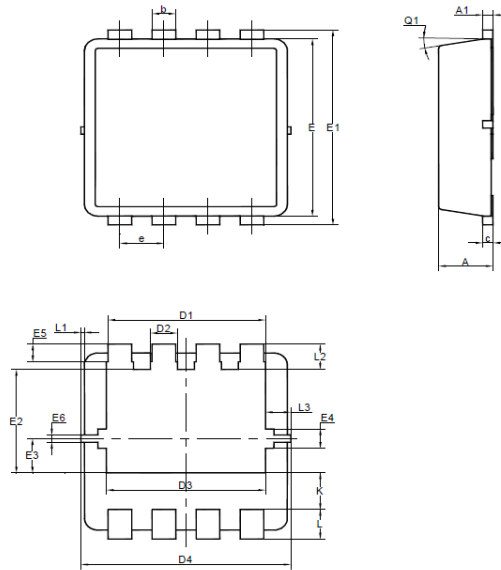
Characteristics (thermal)

Kennwerte (thermisch)

		Min.	Typ.	Max.	
Thermal resistance junction to case Wärmewiderstand Sperrschicht – Gehäuse		R_{thc}	–	5 K/W ¹⁾	–



1 Measured towards heat sink area (Drain) – Gemessen zur Kühlfläche (Drain)

Dimensions - Maße [mm]


UNIT	A	A1	b	c	D	D1	D2	D3	D4	E	E1	E2	E3
mm	0.9	0.05	0.35	0.25	3.1	2.45	0.5	2.7	3.2	3.1	3.3	1.85	0.68
	0.7	0	0.24	0.1	2.9	2.25	0.3	2.5	3	2.9	3.1	1.65	0.48

UNIT	E4	E5	E6	e	K	L	L1	L2	L3	θ_1
mm	0.43	0.4	0.175	0.7	0.72	0.5	0.1	0.53	0.475	12°
	0.23	0.2	0.075	0.6	0.52	0.3	0	0.33	0.275	0°

Disclaimer: See data book page 2 or [website](#)
Haftungsausschluss: Siehe Datenbuch Seite 2 oder [Internet](#)